DEPARTMENT OF TRANSPORTATION
DES-OE MS #43
1727 30TH Street, 2ND Floor
Sacramento, CA 95816

April 14, 2004

03-Pla-80-23.0/53.6
03-0A6004
ACIM-ACBHIM-080-3(231)120

Addendum No. 2

Dear Contractor:

This addendum is being issued to the contract for construction on State highway in PLACER COUNTY FROM ROUTE 80/193 SEPARATION TO AUBURN RAVINE UNDERCROSSING AND FROM 0.8 KM WEST OF AUBURN RAVINE ROAD OVERCROSSING TO ROUTE 174/80 SEPARATION.

Submit bids for this work with the understanding and full consideration of this addendum. The revisions declared in this addendum are an essential part of the contract.

Bids for this work will be opened on April 28,2004.

This addendum is being issued to revise the Project Plans, the Notice to Contractors and Special Provisions, the Proposal and Contract, and the Federal Minimum Wages with Modification Number 4 dated 4-2-04.

Project Plan Sheets 130, 150, 151, 204, 206, 213, 217, 219, 222, and 378 are revised. Half-sized copies of the revised sheets is are attached for substitution for the like-numbered sheets.

Project Plan Sheets 137A, 137B, 137C, 137D, 137E, 137F, 137G,137H, 137I, and 137J are added. Half-sized copies of the added sheets are attached for addition to the project plans.

In the Special Provisions, Section 9, "DESCRIPTION OF BRIDGE WORK," is added as attached.

In the Special Provisions, Section 10-1.01, "ORDER OF WORK," the fourth paragraph is revised as follows:

"Attention is directed to "ASPHALT CONCRETE (TYPE A, 37.5-MM MAXIMUM GRADING)" of these special provisions regarding the requirement that the Contractor shall schedule his paving operations such that each layer of asphalt concrete is placed on contiguous lanes of the traveled way each work shift."

In the Special Provisions, Section 10-1.01 , "ORDER OF WORK," the fifth paragraph is replaced with the following five paragraphs:

"If cold milling equipment is to be used to remove the top portion of the concrete deck surface at Route 80/193 Separation (Bridge No.19-0104), the Contractor shall locate the top bar of the top mat of bar reinforcing steel in conformance with "Remove Concrete Deck Surface" and "Description of Bridge Work" of these special provisions.

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Asphalt concrete surfacing on a bridge deck shall be removed prior to preparing concrete deck surface for a polyester concrete overlay.

The polyester concrete overlay shall be placed prior to structure approach slab work and asphalt concrete roadway work adjoining the approach slab.

The bridges shall be overlayed with polyester concrete and the approach slabs constructed prior to the new joint seals being placed.

Upon completion of bridge work at a bridge location, including joint seal work, adjoining asphalt concrete roadway work shall be performed."

In the Special Provisions, Section 10-1.11, "MAINTAINING TRAFFIC," Lane Closure Charts No. 25, 26 and 27 are added as attached.

In the Special Provisions, Section 10-1.13, "CONSTRUCTION ZONE ENHANCED ENFORCEMENT," the second paragraph is revised as follows:

"Construction zone enhanced enforcement will be required during the performance of work as deemed appropriate by the Engineer."

In the Special Provisions, Section 10-1.13, "CONSTRUCTION ZONE ENHANCED ENFORCEMENT," the third paragraph is deleted.

In the Special Provisions, Section 10-1.165, "CHANNELIZER," is added as follows:

"**10-1.165 CHANNELIZER**

Channelizers shall conform to the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these special provisions.

Channelizers shall conform to the provisions in "Prequalified and Tested Signing and Delineation Materials" of these special provisions.

When no longer required for the work as determined by the Engineer, channelizers and underlying adhesive used to cement the channelizer bases to the pavement shall be removed. Removed channelizers and adhesive shall become the property of the Contractor and shall be removed from the site of work."

In the Special Provisions, Section 10-1.22, "EXISTING HIGHWAY FACILITIES," subsection "REMOVE ASPHALT CONCRETE SURFACING" is replaced as attached.

In the Special Provisions, Section 10-1.22, "EXISTING HIGHWAY FACILITIES," subsection "REMOVE CONCRETE DECK SURFACE" is replaced as attached.

In the Special Provisions, Section 10-1.33, "ASPHALT CONCRETE (TYPE A, 37.5-MM MAXIMUM GRADING)", is replaced as attached.

In the Special Provisions, Section 10-1.34, "REPLACE ASPHALT CONCRETE SURFACING," is replaced as attached.

In the Special Provisions, Section 10-1.35, "ASPHALT CONCRETE," the thirty-fifth paragraph is revised as follows:

"The Contractor shall schedule his paving operations such that each layer of asphalt concrete is placed on contiguous lanes of the traveled way at the end of each work week."

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In the Special Provisions, Section 10-1.35, "ASPHALT CONCRETE," in the eighth paragraph, in the "Quality Requirement" table, the row requiring "Tensile Strength Ratio" – "California Test 371" – "0.70 Min" is deleted.

In the Special Provisions, Section 10-1.41, "STRUCTURE APPROACH SLABS (TYPE R)," subsection "STRUCTURE APPROACH SLAB" is replaced as attached.

In the Special Provisions, Section 10-1.43, "SEALING JOINTS," after the first paragraph, the following is added:

"The bridge deck surface shall conform to the provisions in Section 51-1.17, "Finishing Bridge Decks," of the Standard Specifications prior to placing the joint seal."

In the Special Provisions, Section 10-1.44, "POLYESTER CONCRETE OVERLAY," is replaced as attached.

In the Special Provisions, Section 10-1.45, "RAPID SETTING CONCRETE PATCHES," is replaced as attached.

In the Special Provisions, Section 10-1.46, "REINFORCEMENT," the fourth paragraph is deleted.

In the Proposal and Contract, the Engineer's Estimate Items 8, 9, 13, 41, 51, 62, 65, 66, 72, 88, 111, and 130 are revised. Items 137, 138, and 139 are added. Items 1 and 136 are deleted as attached.

To Proposal and Contract book holders:

Replace the entire Engineer's Estimate in the Proposal with the attached revised Engineer's Estimate. The revised Engineer's Estimate is to be used in the bid.

Indicate receipt of this addendum by filling in the number of this addendum in the space provided on the signature page of the proposal.

Submit bids in the Proposal and Contract book you now possess. Holders who have already mailed their book will be contacted to arrange for the return of their book.

Inform subcontractors and suppliers as necessary.

This office is sending this addendum by UPS overnight mail to Proposal and Contract book holders to ensure that each receives it. A copy of this addendum and the modified wage rates are available for the contractor's use on the Internet Site:

http://www.dot.ca.gov/hq/esc/oe/weekly_ads/addendum_page.html

If you are not a Proposal and Contract book holder, but request a book to bid on this project, you must comply with the requirements of this letter before submitting your bid.

Sincerely,

ORIGINAL SIGNED BY

REBECCA D. HARNAGEL, Chief
Office of Plans, Specifications & Estimates
Office Engineer

Attachments

SECTION 9. DESCRIPTION OF BRIDGE WORK

Structure work consists, in general, of overlaying bridge decks with polyester concrete, replacing joint seals and replacing approach slabs on the following bridges as shown on the plans:

ROUTE 80/193 SEPARATION
Bridge No. (19-0104)

WERNER ROAD UNDERCROSSING
Bridge No. (19-0080)

AUBURN RAVINE UNDERCROSSING
(Bridge No. 19-0081)

BOWMAN UNDERCROSSING
(Bridge No. 19-0042)

BOWMAN OVERHEAD (SOUTH)
(Bridge No. 19-0023)

BOWMAN OVERHEAD (NORTH)
(Bridge No. 19-0024)

ROUTE 80/193 SEPARATION (BRIDGE NO. 19-0104)

Steel Mat Location Plan

If the Contractor elects to use cold milling equipment to remove concrete deck surfacing, the Contractor shall submit a preliminary bar reinforcing steel mat location plan for review by the Engineer for Route 80/193 Separation (Bridge No. 19-0104), detailing methods and all features required to locate the bar reinforcing steel mat in a safe and controlled manner in conformance with "Remove Concrete Deck Surface" of these special provisions.

The number of plans submitted will be four sets, and the time for reviewing the preliminary bar reinforcing steel mat location plan for Route 80/193 Separation (Bridge No. 19-0104) shall be 1 week.

No preliminary bar reinforcing steel mat location work shall start until the Engineer has reviewed the preliminary bar reinforcing steel mat location plan.

Review by the Engineer of a preliminary bar reinforcing steel mat location plan will in no way relieve the Contractor of full responsibility for performing the preliminary bar reinforcing steel mat location method in a safe and controlled manner.

Bridge Work Plan

The Contractor shall submit a complete bridge work plan for approval by the Engineer for Route 80/193 Separation (Bridge No. 19-0104), detailing procedures, sequences, and all features required to perform the bridge deck concrete surface removal and preparation, deck repair, deck overlay and structure approach slab operations, including joint seal installation in a safe and controlled manner.

The bridge work plan for Route 80/193 Separation (Bridge No. 19-0104) shall include, but not be limited to the following:

A. The bridge deck concrete surface removal and preparation sequence.
B. Detailed breakdown of operations to be performed, procedures and types of equipment to perform the operations and the anticipated time frames to complete each operation. Also include an anticipated time frame for deck repair, including curing and drying time, prior to placing the overlay.
C. If cold milling equipment is proposed to be used to remove concrete bridge deck surface, incorporate results from the steel mat location plan and information from the log in "Remove Concrete Bridge Deck" of these special provisions into the bridge work plan. Provide copy of the log from either the nondestructive bar reinforcing steel location equipment method or the potholing method.
D. Measures to assure that people, property, utilities, and improvements will not be endangered.
E. Contingency plans to open bridge decks and bridge approach slabs to public traffic if work cannot be completed in a work shift.
F. Plan shall assure completion of bridge work, including joint seal installation, in one construction season.

The existing top mat of bar reinforcing steel shall not be damaged. If the reinforcing steel is damaged as a result of the Contractor's operations, the reinforcing steel shall be repaired or replaced by the Contractor at the Contractor's expense.

Removed materials shall become the property of the Contractor and shall be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

The number of plans submitted will be four sets, and the time for reviewing complete bridge work plans for Route 80/193 Separation (Bridge No. 19-0104) shall be 2 weeks.

No bridge work shall start until the Engineer has reviewed and approved the complete bridge work plan.

Approval by the Engineer of a bridge plan will in no way relieve the Contractor of full responsibility for expedetiously implementing the plan and performing the work in a safe and controlled manner.

OTHER BRIDGES LISTED

Asphalt Concrete Surface Removal Plan

The Contractor shall submit a complete asphalt concrete surface removal plan for approval by the Engineer for bridges located at Werner Road Undercrossing (Bridge No. 19-0080), Auburn Ravine Undercrossing (Bridge No. 19-0081), Bowman Undercrossing (Bridge No. 19-0042), Bowman Overhead (South) (Bridge No. 19-0023), and Bowman Overhead (North) (Bridge No. 19-0024) detailing procedures, sequences, and all features required to perform the asphalt concrete surface removal in a safe and controlled manner.

The bridge asphalt concrete surface removal plan for bridges located at Werner Road Undercrossing (Bridge No. 19-0080), Auburn Ravine Undercrossing (Bridge No. 19-0081), Bowman Undercrossing (Bridge No. 19-0042), Bowman Overhead (South) (Bridge No. 19-0023), and Bowman Overhead (North) (Bridge No. 19-0024) shall include, but not be limited to the following:

A. The bridge deck asphalt concrete surface removal sequence, including staging of removal operations.
B. Procedures and types of equipment to perform bridge deck asphalt concrete surface removal operations and the anticipated time frames to complete the operations.
C. Include verification of asphalt concrete depths as specified in "Remove Asphalt Concrete Surfacing" of these special provisions.
D. Measures to assure that people, property, utilities, and improvements will not be endangered.

The number of plans submitted will be four sets, and the time for reviewing the complete asphalt concrete surface removal plan for Werner Road Undercrossing (Bridge No. 19-0080), Auburn Ravine Undercrossing (Bridge No. 19-0081), Bowman Undercrossing (Bridge No. 19-0042), Bowman Overhead (South) (Bridge No. 19-0023), and Bowman Overhead (North) (Bridge No. 19-0024) shall be 1 week.

No asphalt concrete surfacing removal work shall start until the Engineer has reviewed and approved the asphalt concrete surfacing removal plan.

Approval by the Engineer of the asphalt concrete surfacing removal plan will in no way relieve the Contractor of full responsibility for performing the asphalt concrete surfacing removal plan and procedure in a safe and controlled manner.

Full compensation for the development, submittal and the implementation of the asphalt concrete surfacing removal plan shall be considered as included in the contract price paid per square meter for remove asphalt concrete surfacing and no additional compensation will be allowed therefor.

Other Bridge Work Plans

The Contractor shall submit a complete bridge work plan for approval by the Engineer for each bridge located at Werner Road Undercrossing (Bridge No. 19-0080), Auburn Ravine Undercrossing (Bridge No. 19-0081), Bowman Undercrossing (Bridge No. 19-0042), Bowman Overhead (South) (Bridge No. 19-0023), and Bowman Overhead (North) (Bridge No. 19-0024), detailing procedures, sequences, and all features required to perform the bridge deck concrete surface preparation, deck repair, deck overlay and structure approach slab operations, including joint seal installation, in a safe and controlled manner.

The bridge work plan for each bridge located at Werner Road Undercrossing (Bridge No. 19-0080), Auburn Ravine Undercrossing (Bridge No. 19-0081), Bowman Undercrossing (Bridge No. 19-0042), Bowman Overhead (South) (Bridge No. 19-0023), and Bowman Overhead (North) (Bridge No. 19-0024) shall include, but not be limited to the following:

A. The bridge deck concrete surface preparation sequence.
B. Detailed breakdown of operations to be performed, procedures and types of equipment to perform the operations and the anticipated time frames to complete each operation. Also include an anticipated time frame for deck repair , including curing and drying time, prior to placing the overlay.
C. Measures to assure that people, property, utilities, and improvements will not be endangered.

D. Contingency plans to open bridge decks and bridge approach slabs to public traffic if work cannot be completed in a work shift.
E. Plan shall assure completion of bridge work, including joint seal installation, in one construction season.

Removed materials shall become the property of the Contractor and shall be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

The number of plans submitted will be four sets, and the time for reviewing bridge work plans shall be 1 week per bridge.

No bridge work at a location shall start until the Engineer has reviewed and approved the complete bridge work plan for that location.

Approval by the Engineer of a bridge plan will in no way relieve the Contractor of full responsibility for expedetiously implementing the plan and performing the work in a safe and controlled manner.

ALL BRIDGES LISTED

The following additional requirements apply to bridge work adjacent to roadways that may be closed to public traffic for only brief periods of time:

A. The closure of roadways to public traffic shall conform to the provisions in "Order of Work" and "Maintaining Traffic" of these special provisions.
B. Prior to closing a roadway to traffic to accommodate bridge work, the Contractor shall have all necessary workers, materials, and equipment at the site as needed to proceed with the bridge work in an expeditious manner. While the roadway is closed to public traffic, work shall be pursued promptly and without interruption until the roadway is reopened to public traffic.
C. Bridge work shall be performed during periods of time that the roadway is closed to public traffic.

For bridge work under existing traffic conditions, the Contractor's designated representative shall be present at all times when bridge operations are in progress. The Contractor's designated representative shall inspect the bridge operations and report in writing on a daily basis the progress of the operations. A copy of the daily report shall be available at the site of the work at all times. Should an unplanned event occur or the bridge operations deviate from the approved plan, the Contractor's designated representative shall submit immediately to the Engineer for approval, the procedure of operation proposed to correct or remedy the occurrence.

Full compensation for the development, submittal and the implementation of the bridge work plans as described herein shall be considered as included in the contract prices paid for the various items of work involved in bridge work and no additional compensation will be allowed therefor.

Chart No. 25
Multilane Lane Requirements

Direction: EASTBOUND Location 3: 03-PLA-80-28.00/29.50

FROM HOUR TO HOUR	a.m. 12	1	2	3	4	5	6	7	8	9	10	11	p.m. 12	1	2	3	4	5	6	7	8	9	10	11	12
Mondays through Thursdays	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Fridays	1	1	1	1	1	1	1	1																	
Saturdays																									
Sundays																					1	1	1	1	
Day before designated legal holiday & Designated legal holidays																									

Legend:

1 One lane, a minimum of 3.6 m wide shall be open in direction of travel.

No closure is allowed.

REMARKS: **THIS CHART FOR CLOSURE OF #2 LANE & RAMPS AS SHOWN ON STAGE CONSTRUCTION PLANS SC-3, SC-4, & SC-5.**
Work shall be performed between May 7 and June 15 or September 15 and October 15 within a single continous 5 working day period as indicated by this chart.

Chart No. 26
Multilane Lane Requirements

Direction: EASTBOUND Location 3: 03-PLA-80-28.00/29.50

FROM HOUR TO HOUR	a.m. 12	1	2	3	4	5	6	7	8	9	10	11	p.m. 12	1	2	3	4	5	6	7	8	9	10	11	12
Mondays through Thursdays	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Fridays	1	1	1	1	1	1	1	1																	
Saturdays																									
Sundays																					1	1	1	1	
Day before designated legal holiday & Designated legal holidays																									

Legend:

1 One lane, a minimum of 3.6 m wide shall be open in direction of travel.

No closure is allowed.

REMARKS: **THIS CHART FOR CLOSURE OF #1 LANE & INSIDE SHOULDER AS SHOWN ON STAGE CONSTRUCTION PLANS SC-6, SC-7, & SC-8.**
Work shall be performed between May 7 and June 15 or September 15 and October 15 within a single continous 5 working day period as indicated by this chart.

Chart No. 27
Multilane & Ramp Requirements

Direction: WESTBOUND Location: 03-PLA-80-23.40/24.50

FROM HOUR TO HOUR	a.m. 12	1	2	3	4	5	6	7	8	9	10	11	p.m. 12	1	2	3	4	5	6	7	8	9	10	11	12
Mondays through Thursday																									
Fridays																									2
Saturdays	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Sundays	2	2	2	2	2	2	2																		
Day before designated legal holiday & Designated legal holidays																									

Legend:

2 Two adjacent lanes, one a minimum of 3.6 m wide, shall open in direction of travel.

No closure allowed.

REMARKS: **THIS CHART FOR K-RAIL CLOSURE OF LANES ON 80/193 SEP BR 19-0104 TO RECONSTRUCT APPROACH SLABS & PERFORM BRIDGE DECK REPAIR INCLUDING METHACRYLATE & POLYESTER OVERLAY.**
Three Lanes Available.
Adjacent on-ramp & off-ramp to be closed & detoured as shown on the plans.

REMOVE ASPHALT CONCRETE SURFACING

Existing asphalt concrete surfacing and deck seal shall be removed to the top of existing portland cement concrete slab at bridge decks as shown on the plans and as described in these special provisions.

The Contractor shall verify the depth of asphalt concrete surfacing at a minimum of one location on each shoulder and one location in the traveled way every 30 meters. If the roadway surface is crowned, the depth shall be verified at the crown also.

The method of removal shall be selected by the Contractor. Equipment or procedures that damage the remaining concrete surface, as determined by the Engineer, shall not be used.

Cold milling equipment may be used to remove asphalt concrete surfacing and deck seal.

If the Contractor elects to use cold milling equipment, the cold milling equipment shall have the capability to 1) remove concrete a minimum depth of 6 mm, 2) provide a surface relief of no more than 6 mm, and 3) maintain a 4-mm grade tolerance; and shall have the following features:

A. 3 or 4 riding tracks.
B. An automatic grade control system with an electronic averaging system having 3 sensors on each side of the equipment.
C. A conveyer system that leaves no debris on the bridge.
D. A drum that operates in an up-milling direction.
E. Bullet tooth tools with tungsten carbide steel cutting tips.
F. A 6-mm maximum tool spacing.
G. A maximum operating mass of 29500 kg.
H. A maximum unit weight per riding track of 90 kilograms per centimeter of track length.

The Contractor shall select which sensors are activated during the milling operation to produce the profile required as shown on the plans.

The cold milling equipment shall have a complete set of new tooth tools at the beginning of the job, and the tooth tools shall be replaced as necessary to perform the work satisfactorily.

The Contractor shall provide personnel on each side of the milling drum to monitor the milling operation and maintain radio communication with the operator at all times during the milling operation.

All removed materials shall become the property of the Contractor and shall be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Remove asphalt concrete surfacing will be measured by the square meter.

The contract price paid per square meter for remove asphalt concrete surfacing shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in removing asphalt concrete surfacing and deck seal as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

REMOVE CONCRETE DECK SURFACE

This work at Route 80/193 Separation (Bridge No. 19-0104) shall consist of removing portions of the portland cement concrete deck surface to a depth of 50 mm, abrasive blasting, and blowing clean the deck surface, as shown on the plans and as described in these special provisions.

The method of concrete removal shall be selected by the Contractor except that scarifiers, coldplaners, scabblers, and similar types of equipment or procedures that leave fractured aggregate or otherwise damage the concrete surface to remain shall not be used. Cold milling equipment may be used to remove up to 25 mm from the concrete deck surface. When concrete removal depth is greater than 25 mm, the remainder shall be removed by a method other than cold milling.

If cold milling equipment is to be used, the Contractor shall determine the actual clearance depth from the concrete deck surface to the top bar of the top mat of bar reinforcing steel by either using nondestructive bar reinforcing steel locating equipment or by potholing prior to submitting the proposed bridge work plan.

A. If the Contractor elects to use nondestructive bar reinforcing steel locating equipment, the Contractor shall demonstrate the effectiveness of the equipment in determining the depth of concrete cover to be within 6 mm. The Engineer will choose 3 sites to conduct the demonstration. The 3 sites will be located within the remove concrete deck surface area. The Contractor shall record the depth at a site, the time it takes to obtain the reading, and then shall verify such a depth by sawcutting, and carefully chipping down to the bar reinforcing steel mat to confirm. A sawcut approximately 13-mm deep shall be made to a true line along the limits of the deck demonstration hole location. The actual depth will be measured from the finished concrete grade to the top of the bar reinforcing steel rib of the top bar. The nondestructive bar reinforcing steel locating equipment will be considered effective if, at all three sites, the concrete cover depth readings are within 6 mm of the actual concrete cover depth. The Contractor shall notify the Engineer a minimum of 48 hours prior to the demonstration. The Engineer or designated Engineer's representative shall witness the demonstration. If the site is in a traveled way, the site shall be repaired prior to opening the lane up to traffic.

   After the nondestructive bar reinforcing steel locating equipment is determined to be effective, the Contractor shall layout and paint points along lane lines, or where the highest bars are located, approximately 3 meters apart within the areas where concrete deck surface is to be removed, between the BB and the EB of the bridge deck. The Contractor shall determine, record and log from plans of the existing bridge, the size of the bar reinforcing steel in the top mat of bar reinforcing steel in the deck prior to performing concrete cover readings and shall determine whether the longitudinal or the transverse bar reinforcing steel is closest to the concrete deck surface.

B. If the Contractor elects to use potholing, the Contractor shall layout, sawcut and pothole 3 locations on each side of the remove concrete deck surface work area. A sawcut approximately 13-mm deep shall be made to a true line along the limits of the deck pothole location. The deck pothole shall be no larger than 300 mm square. The Contractor shall measure the actual depth from the finished concrete grade to the top of the bar reinforcing steel rib of the top bar. The Contractor shall notify the Engineer a minimum of 48 hours prior to the potholing. The Engineer or designated Engineer's representative shall witness potholing.

The closure of roadways to public traffic to locate the the top mat of bar reinforcing steel in the deck shall conform to the provisions in "Order of Work" and "Maintaining Traffic" of these special provisions.

The Contractor shall record and log the following information from either the nondestructive bar reinforcing steel location equipment method or by the potholing method, and shall submit as part of the bridge work plan in "Description of Bridge Work," of these special provisions:

A. Actual depth of concrete cover to the bar reinforcing steel.
B. Plan view showing actual paint points or pothole locations on the bridge deck.

Each sheet of the record shall indicate the State assigned contract number, bridge number, westbound (WB), span number, who performed the measurements and the date of the nondestructive bar reinforcing steel location method or the potholing method.

Voids in the concrete deck resulting from the nondestructive bar reinforcing steel location equipment method or from the potholing method shall be filled to the top of the concrete surface with modified high alumina based concrete in conformance with "Rapid Setting Concrete Patches," of these special provisions. The voids shall be cleaned, filled and cured prior to opening the lane up to public traffic.

Coarse aggregate remaining above the specified removal depth shall be firmly embedded in the remaining concrete.

High pressure water jet equipment shall not be used.

Cold milling equipment shall have the capability to 1) remove concrete a minimum depth of 6 mm, 2) provide a surface relief of no more than 6 mm, and 3) maintain a 4-mm grade tolerance; and shall have the following features:

A. 3 or 4 riding tracks.
B. An automatic grade control system with an electronic averaging system having 3 sensors on each side of the equipment.
C. A conveyer system that leaves no debris on the bridge.
D. A drum that operates in an up-milling direction.
E. Bullet tooth tools with tungsten carbide steel cutting tips.
F. A 6-mm maximum tool spacing.
G. A maximum operating mass of 29500 kg.
H. A maximum unit weight per riding track of 90 kilograms per centimeter of track length.

The Contractor shall select which sensors are activated during the milling operation to produce the profile required as shown on the plans.

The cold milling equipment shall have a complete set of new tooth tools at the beginning of the job, and the tooth tools shall be replaced as necessary to perform the work satisfactorily.

The Contractor shall provide personnel on each side of the milling equipment to monitor the milling operation and maintain radio communication with the operator at all times during the milling operation.

After the deck has been blown clean, unsound concrete shall be removed, as specified under "Remove Unsound Concrete" of these special provisions. When the removal of unsound concrete has been completed, the entire surface shall be abrasive blast cleaned of all surface contaminants. The deck shall be dry when blast cleaning is performed.

If the surface becomes contaminated at any time prior to placing the overlay, the surface shall be cleaned by abrasive blasting.

Where abrasive blasting is being performed within 3 m of a lane occupied by public traffic, the residue including dust shall be removed immediately after contact between the abrasive and the surface being treated. Removal of the residue shall be performed by a vacuum attachment operating concurrently with the abrasive blasting operation.

Nothing in these special provisions shall relieve the Contractor from the responsibility to conform with the provisions in Section 7-1.09, "Public Safety," of the Standard Specifications.

Equipment shall be fitted with suitable traps, filters, drip pans, or other devices, as necessary, to prevent oil or other deleterious material from being deposited on the deck.

All removed materials, including materials generated from the procedure to locate bar reinforcing steel, shall become the property of the Contractor and shall be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Remove concrete deck surface will be measured by the square meter of concrete deck surface to be removed based on dimensions shown on the plans.

The contract price paid per square meter for remove concrete deck surface shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in removing concrete deck surface, except removing unsound concrete, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

If cold milling equipment is to be used to remove concrete bridge deck, full compensation for determining the actual clearance depth from the concrete deck surface to the top bar of the top mat of bar reinforcing steel at Route 80/193 Separation (Bridge No. 19-0104) consisting of either of the following methods as previously described: (1) nondestructive bar reinforcing steel location equipment method or, (2) potholing method; for recording and logging the information; and for cleaning surfaces and furnishing, placing and finishing the modified high alumina based concrete patches; shall be considered as included in the contract prices paid per square meter for remove concrete deck surface and no additional compensation will be allowed therefor.

10-1.33 ASPHALT CONCRETE (TYPE A, 37.5-MM MAXIMUM GRADING)

Asphalt concrete 37.5-mm maximum grading shall be Type A and shall conform to the provisions in Section 39, "Asphalt Concrete," of the Standard Specifications and these special provisions.

Paint binder (tack coat) of asphaltic emulsion shall be furnished and applied in advance of placing each layer of asphalt concrete. Full compensation for furnishing and applying asphaltic emulsion (paint binder) shall be considered as included in the contract price paid per tonne for asphalt concrete placed over the paint binder (tack coat) and no separate payment will be made therefor.

The grade of asphalt binder to be mixed with aggregate for Type A, 37.5-mm maximum grading asphalt concrete shall be steam-refined paving asphalt Grade AR-4000 conforming to the provisions in Section 92, "Asphalts," of the Standard Specifications.

The aggregate for Type A, 37.5-mm maximum grading asphalt concrete shall be lime treated in conformance with "Lime Treated Aggregates" of these special provisions.

The aggregate for Type A, 37.5-mm maximum grading asphalt concrete shall conform to the following grading:

Sieve Size	Limits of Proposed Grading	Operating Range	Contract Compliance
50-mm		100	100
37.5-mm		90-100	88-100
25-mm		75-90	72-93
19-mm		67-82	64-85
9.5-mm		48-64	45-67
4.75-mm	40-44	X±4	X±7
2.36-mm	30-34	X±4	X±7
600-µm	16-20	X±4	X±7
75-µm		2-7	2-10

Aggregate for Type A, 37.5-mm maximum grading asphalt concrete, shall conform to the quality requirements in Section 39-2.02 of the Standard Specifications with the following modifications:

California Test 205 Percentage of Crushed Particles	
Coarse Aggregate (37.5-mm x 19-mm) Contract Compliance Operating Range	 88 percent minimum 90 percent minimum
Coarse Aggregate (19-mm x 4.75-mm) Contract Compliance Operating Range	 90 percent minimum 90 percent minimum
Fine Aggregate (4.75-mm x 2.36-mm)	 70 percent minimum

Coarse aggregate crushed particle count percentage shall be computed separately and all sieve size fractions of the AS RECEIVED sample shall be included in the weighed average percentage. The weighed average percentage of crushed particles retained on the 4.75-mm sieve shall be 90 percent minimum and each particle shall have two or more fractured faces.

Paragraph 6 of Section 39-6.01, "General Requirements," of the Standard Specifications is revised as follows for lift thickness requirements when 37.5-mm maximum grading asphalt concrete is used:

Total Thickness shown on the plans mm	Number of Layers	Top Layer Thickness mm		Next Lower Layer Thickness mm		All Other Lower Layer Thickness mm	
		Min	Max	Min	Max	Min	Max
120 or less	1	--	--	--	--	--	--
150 or more	**	75	120	75	120	75	120

In addition to aggregate quality requirements specified in Section 39-2.02, "Aggregate," of the Standard Specifications, aggregate from each source shall also conform to the following quality requirements:

Test	California Test	Asphalt Concrete Type A
Los Angeles Rattler	211	
Loss at 500 Rev. (Max)		40%

Fine aggregate shall be obtained from a source or sources that meet the requirements for California Test Method 211 specified for coarse aggregate and shall also conform to the following quality requirement:

Test	California Test	Requirement
Durability Index (Df)	229	50 Min

The asphalt content of the asphalt mixture will be determined in conformance with the requirements in California Test 379, or in conformance with the requirements in California Test 382.

Paint binder (tack coat) shall be applied to existing surfaces to be surfaced and between layers of asphalt concrete, except when eliminated by the Engineer.

Paint binder (tack coat) shall be, at the option of the Contractor, either slow-setting asphaltic emulsion, rapid-setting asphaltic emulsion or paving asphalt. Slow-setting asphaltic emulsion and rapid-setting asphaltic emulsion shall conform to the provisions in Section 39-4.02, "Prime Coat and Paint Binder (Tack Coat)," and the provisions in Section 94, "Asphaltic Emulsions," of the Standard Specifications. When paving asphalt is used for paint binder, the grade will be determined by the Engineer. Paving asphalt shall conform to the provisions in Section 39-4.02, "Prime Coat and Paint Binder (Tack Coat)," and the provisions in Section 92, "Asphalts," of the Standard Specifications.

Paint binder (tack coat) shall be applied in the liter per square meter range limits specified for the surfaces to receive asphalt concrete in the tables below. The exact application rate within the range will be determined by the Engineer.

Application Rates for Asphaltic Emulsion Paint Binder (Tack Coat) on Asphalt Concrete (except Open Graded) and on Portland Cement Concrete Pavement (PCCP)		
Type of surface to receive paint binder (tack coat)	Slow-Setting Asphaltic Emulsion L/m^2(Note A)	Rapid-Setting Asphaltic Emulsion L/m^2(Note B)
Dense, compact surfaces, between layers, and on PCCP	0.20 – 0.35	0.10 – 0.20
Open textured, or dry, aged surfaces	0.35 – 0.90	0.20 – 0.40

Note A: Slow-setting asphaltic emulsion is asphaltic emulsion diluted with additional water. Water shall be added and mixed with the asphaltic emulsion (containing up to 43 percent water) so the resulting mixture contains one part asphaltic emulsion and not more than one part added water. The water shall be added by the emulsion producer or at a facility that has the capability to mix or agitate the combined blend.

Note B: Undiluted rapid-setting asphaltic emulsion.

Application Rates for Paint Binder (Tack Coat) on Asphalt Concrete (except Open Graded) and on Portland Cement Concrete Pavement (PCCP)	
Type of surface to receive paint binder (tack coat)	Paving Asphalt L/m^2
Dense, compact surfaces, between layers, and on PCCP	0.05 – 0.10
Open textured, or dry, aged surfaces	0.10 – 0.25

When asphaltic emulsion is used as paint binder (tack coat), asphalt concrete shall not be placed until the applied asphaltic emulsion has completely changed color from brown to black.

Asphalt concrete placed in layers of 45 mm or less in compacted thickness or widths of less than 1.5 m shall be spread and compacted with the equipment and by the methods conforming to the provisions in Section 39, "Asphalt Concrete," of the Standard Specifications. Other asphalt concrete shall be compacted and finished in conformance with the provisions in Section 39 and the following:

A. The provisions in Section 39-5.02, "Compacting Equipment," of the Standard Specifications shall not apply.
B. The Contractor shall furnish a sufficient number of rollers to obtain the compaction specified in these special provisions and the surface finish required by the Standard Specifications and these special provisions.
C. Rollers shall be equipped with pads and water systems that prevent sticking of asphalt mixtures to the pneumatic-tired or steel-tired wheels. A parting agent that will not damage the asphalt mixture may be used.
D. The second paragraph in Section 39-6.01, "General Requirements," of the Standard Specifications shall not apply.
E. Asphalt concrete and asphalt concrete base shall be compacted by any means to obtain the specified relative compaction before the temperature of the mixture drops below 65°C. Additional rolling to achieve the specified relative compaction will not be permitted after the temperature of the mixture drops below 65°C or once the pavement is opened to public traffic. When vibratory rollers are used as finish rollers the vibratory unit shall be turned off.
F. The fifth and seventh through tenth paragraphs of Section 39-6.03, "Compacting," of the Standard Specifications shall not apply.
G. Asphalt concrete and asphalt concrete base shall be compacted to a relative compaction of not less than 96.0 percent and shall be finished to the lines, grades, and cross section shown on the plans. In-place density of asphalt concrete and asphalt concrete base will be determined prior to opening the pavement to public traffic.
H. Relative compaction will be determined by California Test 375.
I. If the test results for a quantity of asphalt concrete or asphalt concrete base indicate that the relative compaction is below 96.0 percent, the Contractor will be notified. Asphalt concrete or asphalt concrete base spreading operations shall not continue until the Contractor has notified the Engineer of the adjustment that will be made in order to meet the specified relative compaction.
J. If the test results for a quantity of asphalt concrete or asphalt concrete base indicate that the relative compaction is less than 96.0 percent, the asphalt concrete or asphalt concrete base represented by that quantity shall be removed, except as otherwise provided in these special provisions. If requested by the Contractor and approved by the Engineer, asphalt concrete or asphalt concrete base with a relative compaction of 93.0 percent or greater may remain in place and the Contractor shall pay to the State the amount of reduced compensation for the quantity with relative compaction less than 96.0 percent and greater than or equal to 93.0 percent. The Department will deduct the amount of reduced compensation from moneys due, or that may become due, the Contractor under the contract. The amount of reduced compensation the Contractor shall pay to the State will be calculated using the total tonnes in the quantity with relative compaction less than 96.0 percent and greater than or equal to 93.0 percent multiplied by the contract price per tonne for asphalt concrete or asphalt concrete base involved multiplied by the following compensation factors:

Relative Compaction (Percent)	Reduced Compensation Factor	Relative Compaction (Percent)	Reduced Compensation Factor
96.0	0.000	94.4	0.062
95.9	0.002	94.3	0.068
95.8	0.004	94.2	0.075
95.7	0.006	94.1	0.082
95.6	0.009	94.0	0.090
95.5	0.012	93.9	0.098
95.4	0.015	93.8	0.108
95.3	0.018	93.7	0.118
95.2	0.022	93.6	0.129
95.1	0.026	93.5	0.142
95.0	0.030	93.4	0.157
94.9	0.034	93.3	0.175
94.8	0.039	93.2	0.196
94.7	0.044	93.1	0.225
94.6	0.050	93.0	0.300
94.5	0.056		

If the Contractor selects the batch mixing method, asphalt concrete shall be produced by the automatic batch mixing method in conformance with the provisions in Section 39-3.03A(2), "Automatic Proportioning," of the Standard Specifications.

If the finished surface of the Type A, 37.5-mm maximum grading asphalt concrete does not meet the specified surface tolerances, the surfacing shall be brought within tolerance by either (1) abrasive grinding (with fog seal coat on the areas which have been ground), (2) removal and replacement or (3) placing an overlay of asphalt concrete. The method will be selected by the Engineer. The corrective work shall be at the Contractor's expense.

If abrasive grinding is used to bring the finished surface to the specified surface tolerances, additional grinding shall be performed, as necessary, to extend the area ground in each lateral direction so that the lateral limits of grinding are at a constant offset from, and parallel to, the nearest lane line or pavement edge, and in each longitudinal direction so that the grinding begins and ends at lines normal to the pavement centerline, within any ground area. Ground areas shall be neat rectangular areas of uniform surface appearance. Abrasive grinding shall conform to the provisions in the first paragraph and the last 4 paragraphs in Section 42-2.02, "Construction," of the Standard Specifications.

The Contractor shall furnish samples of aggregate at least four weeks prior to their intended use, in the quantity requested by the Engineer, from the source or sources he proposes to use for the project. The Engineer shall be notified a minimum of 5 days prior to pulling said samples, and shall witness samples being pulled from their source. The Engineer may eliminate this requirement in writing.

In addition to the provisions in Section 39-5.01, "Spreading Equipment," of the Standard Specifications, asphalt paving equipment shall be equipped with automatic screed controls and a sensing device or devices.

When placing asphalt concrete to the lines and grades established by the Engineer, the automatic controls shall control the longitudinal grade and transverse slope of the screed. Grade and slope references shall be furnished, installed, and maintained by the Contractor. Should the Contractor elect to use a ski device, the minimum length of the ski device shall be 9 m. The ski device shall be a rigid one piece unit and the entire length shall be utilized in activating the sensor.

When placing the initial mat of asphalt concrete on existing pavement, the end of the screed nearest the centerline shall be controlled by a sensor activated by a ski device not less than 9 m long. The end of the screed farthest from centerline shall be controlled by a sensor activated by a similar ski device.

When paving contiguously with previously placed mats, the end of the screed adjacent to the previously placed mat shall be controlled by a sensor that responds to the grade of the previously placed mat and will reproduce the grade in the new mat within a 3-mm tolerance. The end of the screed farthest from the previously placed mat shall be controlled in the same way it was controlled when placing the initial mat.

Should the methods and equipment furnished by the Contractor fail to produce a layer of asphalt concrete conforming to the provisions, including straightedge tolerance, of Section 39-6.03, "Compacting," of the Standard Specifications, the paving operations shall be discontinued and the Contractor shall modify the equipment or methods, or furnish substitute equipment.

Should the automatic screed controls fail to operate properly during a day's work, the Contractor may manually control the spreading equipment for the remainder of that day. However, the equipment shall be corrected or replaced with alternative automatically controlled equipment conforming to the provisions in this section before starting another day's work.

The area to which paint binder has been applied shall be closed to public traffic. Care shall be taken to avoid tracking binder material onto existing pavement surfaces beyond the limits of construction.

10-1.34 REPLACE ASPHALT CONCRETE SURFACING

This work shall consist of removing existing asphalt concrete surfacing and replacing the removed surfacing with new asphalt concrete as shown on the plans and in conformance with these special provisions.

The exact limits of asphalt concrete surfacing to be removed and replaced will be determined by the Engineer.

Existing asphalt concrete surfacing removed during a work period shall be replaced before the time the lane is to be opened to public traffic as designated in "Maintaining Traffic" of these special provisions.

The outline of the asphalt concrete surfacing to be removed shall be cut with a power-driven saw to a depth of not less than 46 mm before removing the surfacing. Surfacing shall be removed without damage to surfacing that is to remain in place. Damage to pavement which is to remain in place shall be repaired to a condition satisfactory to the Engineer or the damaged pavement shall be removed and replaced with new asphalt concrete if ordered by the Engineer. Repairing or removing and replacing pavement damaged outside the limits of pavement to be replaced shall be at the Contractor's expense and will not be measured or paid for.

Removed materials shall be disposed of outside the highway right of way in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

The aggregate for Type A, 19-mm maximum grading asphalt concrete shall conform to the 19 mm maximum, medium grading specified in Section 39-2.03, "Aggregate," in Section 11-1, "Quality Control / Quality Assurance," of these special provisions.

Asphalt concrete (Type A 19-mm maximum grading) used for replace asphalt concrete surfacing shall be produced in conformance with the provisions for asphalt concrete placed on the traveled way in Section 11-1, "Quality Control / Quality Assurance," of these special provisions.

The quantity of replace asphalt concrete surfacing to be paid for will be measured by the cubic meter. The volume to be paid for will be calculated on the basis of the dimensions shown on the plans adjusted by the amount of any change ordered by the Engineer.

The contract price paid per cubic meter for replace asphalt concrete surfacing shall include full compensation for furnishing all labor, materials (including asphalt concrete), tools, equipment, and incidentals, and for doing all the work involved in replacing asphalt concrete surfacing, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

STRUCTURE APPROACH SLAB

Reinforced concrete approach slabs shall conform to the provisions for approach slabs in Section 51, "Concrete Structures," of the Standard Specifications and these special provisions.

Concrete for use in approach slabs on the Route 80/193 Separation (Bridge No. 19-0104), Werner Road Undercrossing (Bridge No. 19-0080) and Auburn Ravine Undercrossing (Bridge No.19-0081) shall contain not less than 400 kg of cement per cubic meter.

Steel components of abutment ties including plates, nuts, washers, and rods shall conform to the provisions in Section 75-1.03, "Miscellaneous Bridge Metal," of the Standard Specifications.

Concrete for use in approach slabs on Bowman Undercrossing (Bridge No. 19-0042), Bowman Overhead (South) (Bridge No. 19-0023) and Bowman Overhead (North) (Bridge No. 19-0024) shall contain not less than 400 kg of cement per cubic meter and shall be air-entrained in conformance with the provisions in "Materials" of these special provisions.

Steel components of abutment ties including plates, nuts, washers, and rods shall conform to the provisions in Section 75-1.03, "Miscellaneous Metal," of the Standard Specifications and shall be epoxy-coated in conformance with the provisions in Section 52-1.02B, "Epoxy-coated Reinforcement" of the Standard Specifications. Galvanizing will not be required.

Bar reinforcement shall be epoxy-coated and shall conform to the provisions in Section 52-1.02B, "Epoxy-coated Reinforcement" of the Standard Specifications.

The steel angles at the concrete barrier joint shall conform to the provision in Section 75-1.03, "Miscellaneous Metal," of the Standard Specifications.

Approach slab concrete that requires a minimum curing period of 6 hours shall be constructed using a non-chloride Type C chemical admixture. Mineral admixture will not be required in this concrete.

Portland cement for use in concrete using a non-chloride Type C chemical admixture shall be Type II Modified, Type II Prestress, or Type III. Type II Modified and Type III cement shall conform to the provisions in Section 90-2.01, "Cement," of the Standard Specifications. Type II Prestress cement shall conform to the requirements of Type II Modified cement, except the mortar containing the portland cement to be used and Ottawa sand, when tested in conformance with California Test 527, shall not contract in air more than 0.053-percent.

The non-chloride Type C chemical admixture shall be approved by the Engineer and shall conform to the requirements in ASTM Designation: C 494 and Section 90-4, "Admixtures," of the Standard Specifications.

The concrete with non-chloride Type C chemical admixture shall be prequalified prior to placement in conformance with the provisions for prequalification of concrete specified by compressive strength in Section 90-9.01, "General," of the Standard Specifications and the following:

A. Immediately after fabrication of the 5 test cylinders, the cylinders shall be stored in a temperature medium of 21 ± 1.5°C until the cylinders are tested.
B. The 6-hour average strength of the 5 test cylinders shall not be less than 5.85 MPa. No more than 2 test cylinders shall have a strength of less than 5.5 MPa.

Building paper shall be commercial quality No. 30 asphalt felt.

Polyvinyl chloride (PVC) conduit used to encase the abutment tie rod shall be commercial quality.

Bar reinforcement or abutment tie rods in drilled holes shall be bonded in conformance with the provisions for drilling and bonding dowels in Section 83-2.02D(1), "General," of the Standard Specifications.

If reinforcement is encountered during drilling before the specified depth is attained, the Engineer shall be notified. Unless the Engineer approves coring through the reinforcement, the hole will be rejected and a new hole, in which reinforcement is not encountered, shall be drilled adjacent to the rejected hole to the depth shown on the plans.

The finished surface of the approach slab shall conform to the provisions in Section 51-1.17, "Finishing Bridge Decks," of the Standard Specifications and these special provisions.

The top surface of approach slabs shall be finished in conformance with the provisions in Section 51-1.17, "Finishing Bridge Decks," of the Standard Specifications. The finished top surface shall not vary more than 6 mm from the lower edge of a 3.6-m straightedge placed parallel with the centerline. Edges of slabs shall be edger finished.

The surface of the approach slab will be profiled and the Profile Index requirements shall apply. Profilograph testing operations will be made after the approach slab is opened to public traffic, but not later than 7 days after concrete placement. The date of profilograph testing operations will be finalized between the Contractor and the Engineer.

Approach slabs shall be cured with pigmented curing compound (1) in conformance with the provisions for curing structures in Section 90-7.01B, "Curing Compound Method," of the Standard Specifications. The minimum curing period as specified herein shall be considered to begin at the start of discharge of the last truck load of concrete to be used in the slab. Fogging of the surface with water after the curing compound has been applied will not be required. Should the film of curing compound be damaged from any cause before the approach slab is opened to public traffic, the damaged portion shall be repaired immediately with additional compound, at the Contractor's expense. Damage to the curing compound after the approach slab is opened to public traffic shall not be repaired.

If the ambient temperature is below 18°C during the curing period, an insulating layer or blanket shall cover the surface. The insulation layer or blanket shall have an R-value rating given in the table below. At the Contractor's option, a heating tent may be used in lieu of or in combination with the insulating layer or blanket:

Temperature range during curing period	R-value, minimum
13°C to 18°C	1
7°C to 13°C	2
4°C to 7°C	3

Tests to determine the coefficient of friction of the final textured surface will be made only if the Engineer determines by visual inspection that the final texturing may not have produced a surface having the specified coefficient of friction. Tests to determine the coefficient of friction will be made after the approach slab is opened to public traffic, but not later than 7 days after concrete placement. The coefficient of friction will be measured by California Test 342. Portions of completed concrete surfaces that are found to have a coefficient of friction less than 0.35 shall be ground or grooved parallel to the center line.

When surfaces are ground or grooved as specified, the work shall be performed in conformance with the provisions in Section 42, "Groove and Grind Pavement," except that residue from grinding or grooving operations shall be disposed of outside the highway right of way in conformance with the provisions in Section 7-1.13, "Disposal of Materials Outside the Highway Right of Way," of the Standard Specifications.

JOINTS

Hardboard and expanded polystyrene shall conform to the provisions in Section 51-1.12D, "Sheet Packing, Preformed Pads and Board Fillers," of the Standard Specifications.

Type AL joint seals shall conform to the provisions in Section 51-1.12F, "Sealed Joints," of the Standard Specifications. The sealant may be mixed by hand-held power-driven agitators and placed by hand methods.

The pourable seal between the steel angle and concrete barrier shall conform to the requirements for Type A and AL seals in Section 51-1.12F(3), "Materials and Installation," of the Standard Specifications. The sealant may be mixed by hand-held power-driven agitators and placed by hand methods. Immediately prior to placing the seal, the joint shall be thoroughly cleaned, including abrasive blast cleaning of the concrete surfaces, so that all foreign material and concrete spillage are removed from all joint surfaces. Joint surfaces shall be dry at the time the seal is placed.

MEASUREMENT AND PAYMENT

Structural concrete, approach slab (Type R) will be measured and paid for in conformance with the provisions in Section 51-1.22, "Measurement," and Section 51-1.23, "Payment," of the Standard Specifications and these special provisions.

Full compensation for removing and disposing of portions of pavement materials, and for furnishing and placing miscellaneous metal, epoxy-coated materials, Type AL joint seals, and pourable seals shall be considered as included in the contract price paid per cubic meter for structural concrete, approach slab (Type R) and no separate payment will be made therefor.

The quantity of aggregate base (approach slab) to be paid for shall include the actual volume of aggregate base (approach slab) used to fill voids below the reinforced structure approach slab concrete, except for the volume of areas low as a result of over excavation. The volume to be paid for will be calculated on the basis of the constructed length, width, and thickness of the filled voids. Structure approach slab concrete used to fill voids lower than the approved grade of the base, except for the areas low as a result of over excavation by the Contractor, will be measured and paid for by the cubic meter as aggregate base (approach slab).

The contract price paid per cubic meter for aggregate base (approach slab) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing aggregate base (approach slab), complete in place, including excavation and removing and disposing of base and subsealing materials, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Full compensation for furnishing, stockpiling, and disposing of standby material for construction of temporary structural sections; and for constructing, maintaining, removing, and disposing of temporary structural sections shall be considered as included in the contract price paid per cubic meter for structural concrete, approach slab (Type R) and no separate payment will be made therefor.

Full compensation for drilling and bonding of bar reinforcement or abutment tie rods shall be considered as included in the contract price paid per cubic meter for structural concrete, approach slab (Type R) and no separate payment will be made therefor.

10-1.44 POLYESTER CONCRETE OVERLAY

GENERAL

This work shall consist of constructing a polyester concrete overlay, including application of a prime coat, in conformance with the details shown on the plans and these special provisions.

Before starting deck overlay work on the project, the Contractor shall submit for approval by the Engineer, a program for public safety associated with the use of methacrylate resin and polyester concrete during the construction of the project. This program shall identify materials, equipment, and methods to be used. The Contractor shall not perform any deck overlay work on the project, other than that specifically authorized in writing by the Engineer, until the program has been approved.

If the measures being taken by the Contractor are inadequate to provide for public safety associated with the use of methacrylate resin and polyester concrete, the Engineer will direct the Contractor to revise the operations and public safety program. These directions will be in writing and will specify the items of work for which the Contractor's program for public safety associated with the use of methacrylate resin and polyester concrete is inadequate. No further work shall be performed on these items until the public safety measures are adequate, and if required, a revised program for public safety associated with the use of methacrylate resin and polyester concrete has been approved.

The Engineer will notify the Contractor in writing of the approval or rejection of any submitted or revised program for public safety associated with the use of methacrylate resin and polyester concrete in not more than 10 working days following submittal.

The State will not be liable to the Contractor for failure to approve all or any portion of an originally submitted or revised program for public safety associated with the use of methacrylate resin and polyester concrete, nor for any delays to the work due to the Contractor's failure to submit an acceptable program for public safety associated with the use of methacrylate resin and polyester concrete.

Surface preparation shall be as specified in "Prepare Concrete Bridge Deck Surface" and "Remove Concrete Deck Surface" of these special provisions.

MATERIALS

Polyester concrete shall consist of polyester resin binder and dry aggregate. The resin shall be an unsaturated isophthalic polyester-styrene co-polymer conforming to the following:

POLYESTER RESIN BINDER		
PROPERTY	REQUIREMENT	TEST METHOD
* Viscosity	0.075 to 0.200 Pa·s (RVT, No. 1 Spindle, 20 RPM at 25°C)	ASTM D 2196
* Specific Gravity	1.05 to 1.10 at 25°C	ASTM D 1475
Elongation	35 percent, minimum Type I at 11.5 mm/min. Thickness= 6.5±1 mm	ASTM D 638
	Sample Conditioning: 18/25/50 + 5/70	ASTM D 618
Tensile Strength	17.5 MPa, minimum Type I at11.5 mm/min. Thickness= 6.5±1 mm	ASTM D 638
	Sample Conditioning: 18/25/50 + 5/70	ASTM D 618
* Styrene Content	40 percent to 50 percent (by weight)	ASTM D 2369
Silane Coupler	1.0 percent, minimum (by mass of polyester styrene resin)	
PCC Saturated Surface-Dry Bond Strength	3.5 MPa, minimum at 24 hours and 21±1°C	California Test 551
* Static Volatile Emission	60 gram per square meter, loss, maximum	South Coast Air Quality Management District, Standard Method
* Test shall be performed prior to adding initiator.		

The silane coupler shall be an organosilane ester, gammamethacryloxypropyltrimethoxysilane. The promoter shall be compatible with suitable methyl ethyl ketone peroxide (MEKP) and cumene hydroperoxide (CHP) initiators.

Aggregate for polyester concrete shall conform to the provisions in Section 90-2.02, "Aggregates," of the Standard Specifications and either of the following combined aggregate gradings:

COMBINED AGGREGATE		
Sieve Size	Percentage Passing	
	9.5-mm Max.	4.75-mm Max.
12.5-mm	100	100
9.5-mm	83 - 100	100
4.75-mm	65 - 82	62 - 85
2.36-mm	45 - 64	45 - 67
1.18-mm	27 - 48	29 - 50
600-µm	12 - 30	16 - 36
300-µm	6 - 17	5 - 20
150-µm	0 - 7	0 - 7
75-µm	0 - 3	0 - 3

Aggregate retained on the 2.36-mm sieve shall have a maximum of 45 percent crushed particles when tested in conformance with California Test 205. Fine aggregate shall consist of natural sand.

The polyester resin binder in the concrete shall be approximately 12 percent by mass of the dry aggregate; the exact percentage will be determined by the Engineer.

The average of coarse and fine aggregate absorption shall not exceed one percent as determined by California Tests 206 and 207.

At the time of mixing with the resin, the moisture content of the aggregate, as determined by California Test 226, shall not exceed one half of the aggregate absorption.

The prepared surface shall receive a wax-free, low odor, high molecular weight methacrylate prime coat. The prime coat shall be a resin, and prior to adding initiator, the resin shall have a maximum volatile content of 30 percent when tested in conformance with the requirements in ASTM Designation: D 2369, and shall conform to the following:

High Molecular Weight Methacrylate (HMWM) Resin		
PROPERTY	REQUIREMENT	TEST METHOD
* Viscosity	0.025 Pa·s, maximum, (Brookfield RVT with UL adaptor, 50 RPM at 25°C)	ASTM D 2196
* Specific Gravity	0.90, minimum, at 25°C	ASTM D 1475
* Flash Point	82°C, minimum	ASTM D 3278
* Vapor Pressure	1.0 mm Hg, maximum, at 25°C	ASTM D 323
Tack-free time	400 minutes, maximum at 25°C	California Test 551
PCC Saturated Surface-Dry Bond Strength	3.5 MPa, minimum at 24 hours and 21±1°C	California Test 551
* Test shall be performed prior to adding initiator.		

The promoter/initiator system for the methacrylate resin shall consist of a metal drier and peroxide. If supplied separately from the resin, at no time shall the metal drier be mixed with the peroxide directly. The containers shall not be stored in a manner that will allow leakage or spillage from one material to contact the containers or material of the other.

A Material Safety Data Sheet shall be furnished prior to use for each shipment of polyester resin binder and high molecular weight methacrylate resin.

The Contractor shall allow 14 days for sampling and testing of the polyester resin binder and high molecular weight methacrylate resin prior to proposed use.

If bulk resin is to be used, the Contractor shall notify the Engineer in writing 10 days prior to the delivery of the bulk resin to the jobsite. Bulk resin is any resin that is stored in containers in excess of 209 liters.

CONSTRUCTION

Prior to constructing the overlay, one or more trial overlays shall be placed on a previously constructed concrete base to determine the initial set time and to demonstrate the effectiveness of the mixing, placing, and finishing equipment proposed. Each trial overlay shall be 3.6-m wide, at least 1.8-m long, and the same thickness as the overlay to be constructed. Conditions during the construction of the trial overlays and equipment used shall be similar to those expected and those to be used for the construction of the polyester concrete overlay.

All materials used in the trial overlays, including the concrete base, shall become the property of the Contractor and shall be removed and disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Right of Way," of the Standard Specifications.

When modified high alumina based concrete is placed prior to the deck overlay, the prime coat shall not be placed on the concrete until at least 30 minutes after final set.

Expansion joints shall be adequately isolated prior to overlaying or may be sawed within 4 hours after overlay placement, as approved by the Engineer. The exact time of sawing will be determined by the Engineer.Prior to applying the prime coat, the area to receive the prime coat shall be dry and blown clean by compressed air to remove accumulated dust and any other loose material. The surface temperature shall be at least 10°C and the relative humidity less than 85 percent when the prime coat is applied.

The prime coat shall be uniformly applied to completely cover the surface to receive the polyester concrete. The rate of spread shall be approximately 1.5 square meters per liter.

The prime coat shall be allowed to cure a minimum of 15 minutes before placing polyester concrete. If the primed surface becomes contaminated, the contaminated area shall be cleaned by abrasive blasting and reprimed at the Contractor's expense.

Polyester concrete shall be placed within 120 minutes after the prime coat has been applied.

A continuous mixer, employing an auger screw/chute device, may be approved for use by the Engineer upon demonstrating its ability to produce a satisfactory product. The continuous mixer shall 1) be equipped with a metering device that automatically measures and records the aggregate volumes and the corresponding resin volumes, and 2) have a readout gage, visible to the Engineer at all times, that displays the volumes being recorded. The volumes shall be recorded at no greater than 5 minute intervals along with the time and date of each recording. A printout of the recordings shall be furnished to the Engineer at the end of each workshift.

The amount of initiator used in polyester concrete shall be sufficient to produce an initial set time between 30 and 120 minutes during placement. The initial set time will be determined by using an initial-setting time Gillmore needle in conformance with the requirements in ASTM Designation: C 266. Accelerators or inhibitors may be required to achieve proper set times and shall be used as recommended by the resin supplier.

The resin binder shall be initiated and thoroughly blended just prior to mixing with aggregate. The polyester concrete shall be mixed a minimum of 2 minutes prior to placing.

Polyester concrete shall be placed prior to gelling and within 15 minutes following addition of initiator, whichever occurs first. Polyester concrete that is not placed within this time shall be discarded.

The surface temperature of the area to receive polyester concrete shall be the same as specified above for the prime coat.The finishing equipment used shall strike off the polyester concrete to the established grade and cross section. Finishing equipment shall be fitted with vibrators or other means of consolidating the polyester concrete to the required compaction.

The polyester concrete shall be consolidated to a relative compaction of not less than 97 percent in conformance with California Test 552.

The finished surface of the polyester concrete overlay shall conform to the provisions in Section 51-1.17, "Finishing Bridge Decks," of the Standard Specifications and these special provisions.

Attention is directed to "Structure Approach Slabs (Type R)" of these special provisions for scheduling profilograph testing operations after the overlay and the approach slab is placed.

Polyester concrete surfaces shall receive an abrasive sand finish. The sand shall be commercial quality blast sand conforming to the quality and dryness requirements for polyester concrete aggregate as specified in these special provisions. Ninety-five percent of the sand shall pass the 2.36-mm sieve, and 95 percent shall be retained on the 850-µm sieve.

The sand finish shall be uniformly applied immediately after overlay strike-off and before gelling occurs to provide a minimum uniform coverage of 0.4-kilogram per square meter.

The surface texture of polyester concrete overlay surfaces shall be uniform and shall have a coefficient of friction of not less than 0.35 as measured by California Test 342. Portions of surfaces that do not meet the above provision shall be ground or grooved parallel to the centerline.

When surfaces are ground or grooved as specified, the work shall be performed in conformance with the provisions in Section 42, "Groove and Grind Pavement," except that residue from grinding or grooving operations shall be disposed of outside the highway right of way in conformance with the provisions in Section 7-1.13, "Disposal of Materials Outside the Highway Right of Way," of the Standard Specifications.

Traffic and equipment shall not be permitted on the overlay for a minimum of 4 hours following final finishing. Overlays shall be protected from moisture for a minimum of 4 hours after finishing.

MEASUREMENT AND PAYMENT

Furnishing polyester concrete overlay will be measured by the cubic meter. The volume to be paid for will be determined from calculations based on the quantity of resin binder used and the yield of the specified mix design. The Contractor shall furnish suitable measuring devices to assure correct proportioning of materials and accurate measurements for calculating pay quantities. The pay quantity shall be the calculated quantity of polyester concrete overlay used in the work, including actual volume of polyester concrete used to fill voids in the deck 76 mm or less from the top surface of the existing deck, exclusive of material used in trial overlays, and any wasted or unused material.

Placing polyester concrete overlay will be measured by the square meter. The area to be paid for will be based on the dimensions shown on the plans.

The contract price paid per cubic meter for furnish polyester concrete overlay shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing polyester concrete and filling voids in the deck, including polyester resin binder, promoter/initiator, and aggregate, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The contract price paid per square meter for place polyester concrete overlay shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the polyester concrete overlay, complete in place, including application of prime coat and furnishing, constructing, and disposing of trial overlays and base, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Full compensation for compliance with the requirements for a program for public safety associated with use of methacrylate resin and polyester concrete shall be considered as included in the contract prices paid for the items of work involving polyester concrete overlay and no additional compensation will be allowed therefor.

Full compensation for grinding and grooving, as required, shall be considered as included in the contract prices paid for the items of work involving polyester concrete overlay and no additional compensation will be allowed therefor.

10-1.45 RAPID SETTING CONCRETE PATCHES

This work shall consist of cleaning the surfaces and furnishing, placing, and finishing concrete patches used to fill voids up to the existing bridge deck surface that are greater than 76 mm from the top surface of the existing bridge deck and for concrete patches used to fill voids in the concrete deck resulting from a method used to locate bar reinforcing steel in conformance with "Remove Concrete Deck Surface" of these special provisions. Concrete patches shall be placed in conformance with the details shown on the plans, the provisions of the Standard Specifications, and these special provisions.

Attention is directed to "Remove Concrete Deck Surface" and "Description of Bridge Work" of these special provisions for locating bar reinforcing steel mat.

The concrete material shall be a high-strength material consisting of modified high alumina based concrete. Modified high alumina based concrete shall be water activated and shall conform to the requirements for single component (water activated) magnesium phosphate concrete in Section 83-2.02D(1), "General," of the Standard Specifications and these special provisions.

A clean uniform rounded aggregate filler may be used to extend the concrete. The moisture content of the aggregate shall not exceed 0.5 percent. Grading of the aggregate shall conform to the following:

Sieve Size	Percentage Passing
12.5 mm	100
1.18 mm	0-5

The amount of aggregate filler shall conform to the manufacturer's recommendations, but in no case shall the concrete strengths be less than that specified for magnesium phosphate concrete in Section 83-2.02D(1), "General," of the Standard Specifications.

Cleaning the contact surfaces of existing concrete shall be accomplished by abrasive blast cleaning the concrete and exposed reinforcing steel, as necessary, to remove all rust, paint, grease, asphalt or other foreign materials. A minimum of 3 mm of concrete shall be removed. Immediately prior to applying the new concrete, the surfaces shall be recleaned by sweeping and pressure jetting, or by other approved means, as necessary to remove debris which has accumulated during construction or after abrasive blast cleaning. The surface temperature of the areas to be covered shall be 23°C or above when the concrete is applied. Methods proposed to heat said surfaces are subject to approval by the Engineer. The contact surfaces for modified high alumina based concrete may be damp but not saturated.

Modified high alumina based concrete shall not be mixed in containers or worked with tools containing aluminum.

Concrete shall not be retempered. Finishing tools that are cleaned with water shall be thoroughly dried before working the concrete.

When placing concrete on slopes exceeding 5 percent, the Engineer may require the Contractor to provide a flow controlled modified material.

Modified high alumina based concrete shall be cured in conformance with the pigmented curing compound (1) or (2) provisions in Section 90-7.01B, "Curing Compound Method," or with the water method in Section 90-7.01A, "Water Method," of the Standard Specifications and these special provisions. When the concrete patch is placed during the same workshift that the polyester concrete overlay is to be placed, the modified alumina based concrete shall be water cured.

The cure time of the concrete patch before final set is dependent on both temperature and concrete compressive strength. A minimum compressive strength of 21 MPa is required for concrete patches. When air or concrete surface temperature is at least 23°C, the concrete patch shall cure at least 3 hours to obtain the required minimum compressive strength. Prior to placing a concrete patch when the air or concrete surface temperature is below 23°C, the Contractor shall have the option to either warm and maintain the concrete surface temperature surface areas to be covered to at least 23°C or to prequalify the modified high alumina based concrete for the temperature range and the actual cure time to achieve the minimum compressive strength. Prequalification shall conform to the provisions for acceptable certified test data or trial batch reports in Section 90-9, "Compressive Strength," of the Standard Specifications. Certified test data shall be in conformance with the requirements of California Test 551, except that the temperature of the materials, molds and curing environment shall match the temperature expected that is below 23°C.

After completion of the water cure and prior to preparing the concrete deck surface for the polyester concrete overlay, the modified high alumina based concrete shall be allowed to dry a minimum of 30 minutes.

Unless otherwise permitted in writing by the Engineer, public traffic shall not be permitted on the new concrete until at least one hour after final set.

Cleaning the surfaces, furnishing and placing rapid setting concrete patches in voids greater than 76 mm deep from the top surface of the existing bridge deck will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications.

Modified high alumina based concrete patches shall be measured and paid for as specified in "Remove Concrete Deck Surface" of these special provisions.

ENGINEER'S ESTIMATE
03-0A6004

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
1	BLANK					
2	070012	PROGRESS SCHEDULE (CRITICAL PATH METHOD)	LS	LUMP SUM	LUMP SUM	
3	070018	TIME-RELATED OVERHEAD	WDAY	305		
4	074019	PREPARE STORM WATER POLLUTION PREVENTION PLAN	LS	LUMP SUM	LUMP SUM	
5	074020	WATER POLLUTION CONTROL	LS	LUMP SUM	LUMP SUM	
6 (S)	120090	CONSTRUCTION AREA SIGNS	LS	LUMP SUM	LUMP SUM	
7 (S)	120100	TRAFFIC CONTROL SYSTEM	LS	LUMP SUM	LUMP SUM	
8 (S)	120151	TEMPORARY TRAFFIC STRIPE (TAPE)	M	13 200		
9 (S)	120159	TEMPORARY TRAFFIC STRIPE (PAINT)	M	5100		
10	032410	TRAFFIC PLASTIC DRUM	EA	75		
11 (S)	128650	PORTABLE CHANGEABLE MESSAGE SIGN	LS	LUMP SUM	LUMP SUM	
12	032411	PORTABLE RADAR TRAILER	LS	LUMP SUM	LUMP SUM	
13	129000	TEMPORARY RAILING (TYPE K)	M	2870		
14	129100	TEMPORARY CRASH CUSHION MODULE	EA	56		
15	129150	TEMPORARY TRAFFIC SCREEN	M	810		
16	150206	ABANDON CULVERT	EA	1		
17	150662	REMOVE METAL BEAM GUARD RAILING	M	420		
18	032412	REMOVE YELLOW TRAFFIC STRIPE	M	1130		
19	032413	REMOVE WHITE TRAFFIC STRIPE	M	500		
20	150742	REMOVE ROADSIDE SIGN	EA	210		

ENGINEER'S ESTIMATE
03-0A6004

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
21	150760	REMOVE SIGN STRUCTURE	EA	2		
22	150769	REMOVE ASPHALT CONCRETE	M3	66		
23	150771	REMOVE ASPHALT CONCRETE DIKE	M	49 400		
24	150805	REMOVE CULVERT	M	33		
25	032414	REMOVE UNDERDRAIN	M	54		
26	150820	REMOVE INLET	EA	4		
27	150821	REMOVE HEADWALL	EA	1		
28	150823	REMOVE DOWNDRAIN	EA	4		
29	150857	REMOVE ASPHALT CONCRETE SURFACING	M2	8220		
30	150859	REMOVE ASPHALT CONCRETE OVERSIDE DRAIN	EA	150		
31	150870	REMOVE CONCRETE DECK SURFACE	M2	251		
32	032415	RECONSTRUCT FENCE (TYPE WM, METAL POST)	M	150		
33 (S)	151572	RECONSTRUCT METAL BEAM GUARD RAILING	M	11 800		
34 (S)	151624	RECONSTRUCT METAL BEAM GUARD RAILING (2.1 M POST)	M	770		
35	152039	RELAY ENTRANCE TAPER	EA	35		
36	152320	RESET ROADSIDE SIGN	EA	15		
37	152430	ADJUST INLET	EA	140		
38	152555	ADJUST SLOTTED DRAIN TO GRADE	M	380		
39	152604	MODIFY INLET	EA	10		
40 (S)	032416	PLASTIC PIPE LINER (985 MM ID)	M	23		

ENGINEER'S ESTIMATE
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Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
41 (S)	153103	COLD PLANE ASPHALT CONCRETE PAVEMENT	M2	862 000		
42 (S)	032417	RUMBLE STRIPS IN ASPHALT CONCRETE PAVEMENT (GROUND IN)	STA	603		
43	153210	REMOVE CONCRETE	M3	150		
44	153214	REMOVE CONCRETE CURB	M	4240		
45	153216	REMOVE CONCRETE CURB AND SIDEWALK	M	250		
46	153218	REMOVE CONCRETE SIDEWALK	M	25		
47	153225	PREPARE CONCRETE BRIDGE DECK SURFACE	M2	9290		
48	155003	CAP INLET	EA	3		
49	156577	REMOVE BARRIER RAILING	M	350		
50	160120	REMOVE TREE	EA	3		
51	190101	ROADWAY EXCAVATION	M3	17 100		
52	190110	LEAD COMPLIANCE PLAN	LS	LUMP SUM	LUMP SUM	
53	190134	ROADWAY EXCAVATION (GORE REMOVAL)	M3	820		
54	190185	SHOULDER BACKING	STA	360		
55	032418	GEOSYNTHETIC REINFORCED EMBANKMENT	M2	530		
56	032419	IMPORTED BORROW (GEOSYNTHETIC REINFORCED EMBANKMENT)	M3	610		
57	198007	IMPORTED MATERIAL (SHOULDER BACKING)	TONN	4510		
58 (S)	032420	SOIL WRAP	M3	350		
59 (S)	032421	EROSION CONTROL (MULCH)	M2	210		
60 (S)	032422	EROSION CONTROL (COIR NETTING)	M2	1790		

ENGINEER'S ESTIMATE
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Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
61 (S)	032423	EROSION CONTROL (COMPOST)	KG	32		
62	260201	CLASS 2 AGGREGATE BASE	M3	8400		
63	260210	AGGREGATE BASE (APPROACH SLAB)	M3	128		
64	390095	REPLACE ASPHALT CONCRETE SURFACING	M3	190		
65	390155	ASPHALT CONCRETE (TYPE A)	TONN	254 000		
66	390207	RUBBERIZED ASPHALT CONCRETE (TYPE O)	TONN	44 500		
67	391031	PAVING ASPHALT (BINDER-PAVEMENT REINFORCING FABRIC)	TONN	14		
68	393001	PAVEMENT REINFORCING FABRIC	M2	11 000		
69	394002	PLACE ASPHALT CONCRETE (MISCELLANEOUS AREA)	M2	32 600		
70	394040	PLACE ASPHALT CONCRETE DIKE (TYPE A)	M	26 600		
71	394044	PLACE ASPHALT CONCRETE DIKE (TYPE C)	M	490		
72	390188	ASPHALT CONCRETE (TYPE A, 37.5 MM MAXIMUM GRADING)	TONN	128 000		
73	394046	PLACE ASPHALT CONCRETE DIKE (TYPE D)	M	220		
74	394048	PLACE ASPHALT CONCRETE DIKE (TYPE E)	M	14 100		
75	394049	PLACE ASPHALT CONCRETE DIKE (TYPE F)	M	11 700		
76	401000	CONCRETE PAVEMENT	M3	1250		
77	404092	SEAL PAVEMENT JOINT	M	26		
78	510087	STRUCTURAL CONCRETE, APPROACH SLAB (TYPE R)	M3	1239		
79 (F)	510502	MINOR CONCRETE (MINOR STRUCTURE)	M3	55		
80	032424	MINOR CONCRETE (BARRIER SLAB)	M3	760		

ENGINEER'S ESTIMATE
03-0A6004

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
81	032425	MINOR CONCRETE (BARRIER CAP)	M3	830		
82	510800	PAVING NOTCH EXTENSION	M3	35		
83	515041	FURNISH POLYESTER CONCRETE OVERLAY	M3	233		
84 (F)	515042	PLACE POLYESTER CONCRETE OVERLAY	M2	9541		
85 (S)	519117	JOINT SEAL (MR 30 MM)	M	212		
86 (S)	519120	JOINT SEAL (MR 15 MM)	M	306		
87 (F)	560203	FURNISH SIGN STRUCTURE (BRIDGE MOUNTED WITH WALKWAY)	KG	5800		
88 (S-F)	560204	INSTALL SIGN STRUCTURE (BRIDGE MOUNTED WITH WALKWAY)	KG	5800		
89 (F)	560218	FURNISH SIGN STRUCTURE (TRUSS)	KG	68 674		
90 (S-F)	560219	INSTALL SIGN STRUCTURE (TRUSS)	KG	68 674		
91 (S)	561008	760 MM CAST-IN-DRILLED-HOLE CONCRETE PILE (SIGN FOUNDATION)	M	130		
92 (S)	561009	920 MM CAST-IN-DRILLED-HOLE CONCRETE PILE (SIGN FOUNDATION)	M	3		
93 (S)	561010	1070 MM CAST-IN-DRILLED-HOLE CONCRETE PILE (SIGN FOUNDATION)	M	7		
94 (S)	032426	1524 MM CAST-IN-DRILLED-HOLE CONCRETE PILE (SIGN FOUNDATION)	M	7		
95	566011	ROADSIDE SIGN - ONE POST	EA	42		
96	566012	ROADSIDE SIGN - TWO POST	EA	67		
97	568001	INSTALL SIGN (STRAP AND SADDLE BRACKET METHOD)	EA	81		
98	664010	300 MM CORRUGATED STEEL PIPE (2.01 MM THICK)	M	52		
99	664015	450 MM CORRUGATED STEEL PIPE (2.01 MM THICK)	M	20		
100	664029	750 MM CORRUGATED STEEL PIPE (2.77 MM THICK)	M	6		

ENGINEER'S ESTIMATE
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Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
101	664044	1200 MM CORRUGATED STEEL PIPE (2.77 MM THICK)	M	39		
102	680466	200 MM PERFORATED STEEL PIPE UNDERDRAIN (2.01 MM THICK)	M	69		
103	680637	200 MM NON-PERFORATED STEEL PIPE UNDERDRAIN (2.01 MM THICK)	M	54		
104	690159	300 MM CORRUGATED STEEL PIPE DOWNDRAIN (1.63 MM THICK)	M	30		
105	692383	300 MM ANCHOR ASSEMBLY	EA	12		
106	720120	ROCK SLOPE PROTECTION (1/2T, METHOD A)	M3	700		
107	721010	ROCK SLOPE PROTECTION (BACKING NO. 1, METHOD B)	M3	200		
108	729010	ROCK SLOPE PROTECTION FABRIC	M2	1550		
109	731505	MINOR CONCRETE (CURB AND SIDEWALK)	M3	29		
110	731623	MINOR CONCRETE (CURB RAMP)	M3	23		
111 (S-F)	750001	MISCELLANEOUS IRON AND STEEL	KG	5920		
112	820107	DELINEATOR (CLASS 1)	EA	130		
113	820108	DELINEATOR (CLASS 2)	EA	700		
114	032427	HIGHWAY POST MARKER	EA	74		
115	820141	OBJECT MARKER (TYPE K-1)	EA	15		
116	820151	OBJECT MARKER (TYPE L-1)	EA	63		
117 (S)	832003	METAL BEAM GUARD RAILING (WOOD POST)	M	3270		
118 (S)	839559	TERMINAL SYSTEM (TYPE ET)	EA	3		
119 (S)	839565	TERMINAL SYSTEM (TYPE SRT)	EA	35		
120 (S)	839568	TERMINAL ANCHOR ASSEMBLY (TYPE SFT)	EA	43		

ENGINEER'S ESTIMATE
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Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
121	032428	CONCRETE BARRIER (TYPE 736 MOD)	M	400		
122	032429	CONCRETE BARRIER (TYPE 736 B MOD)	M	370		
123 (S)	840515	THERMOPLASTIC PAVEMENT MARKING	M2	740		
124 (S)	840560	THERMOPLASTIC TRAFFIC STRIPE (SPRAYABLE)	M	127 000		
125 (S)	840561	100 MM THERMOPLASTIC TRAFFIC STRIPE	M	2630		
126 (S)	840563	200 MM THERMOPLASTIC TRAFFIC STRIPE	M	6720		
127 (S)	840570	100 MM THERMOPLASTIC TRAFFIC STRIPE (BROKEN 10.98 M - 3.66 M)	M	85 800		
128 (S)	840571	100 MM THERMOPLASTIC TRAFFIC STRIPE (BROKEN 5.18 M - 2.14 M)	M	1300		
129 (S)	850101	PAVEMENT MARKER (NON-REFLECTIVE)	EA	90		
130 (S)	850111	PAVEMENT MARKER (RETROREFLECTIVE)	EA	2520		
131 (S)	850122	PAVEMENT MARKER (RETROREFLECTIVE-RECESSED)	EA	4580		
132 (S)	860460	LIGHTING AND SIGN ILLUMINATION	LS	LUMP SUM	LUMP SUM	
133 (S)	032430	TRAFFIC OPERATIONS SYSTEMS	LS	LUMP SUM	LUMP SUM	
134 (S)	861501	MODIFY SIGNAL AND LIGHTING	LS	LUMP SUM	LUMP SUM	
135 (S)	032431	FIBER OPTIC SYSTEM	LS	LUMP SUM	LUMP SUM	
136	BLANK					
137	120165	CHANNELIZER (SURFACE MOUNTED)	EA	39		
138 (F)	520101	BAR REINFORCING STEEL	KG	7030		
139	999990	MOBILIZATION	LS	LUMP SUM	LUMP SUM	

TOTAL BID: _____